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CASES OF OCULAR  
PARALYSIS.

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## CASE OF PARALYSIS OF BOTH FACIAL AND BOTH ABDUCENT NERVES FOLLOWING INJURY.<sup>1</sup>

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Henry M.<sup>2</sup>—, aged 23, switchman. On August 21, 1888, while coupling cars loaded with lumber, the young man's head was caught between the ends of the lumber projecting beyond the platforms of the two cars between which he stood. He was, afterwards, picked up in an unconscious state, and taken to the Fitch Accident Hospital. From the hospital memoranda we learn that "a scalp wound was inflicted on the left side of the head, over the occiput, and about two inches in length; profuse hemorrhage from the ears, nose, and mouth, with frequent vomiting of blood; pulse, 54; respiration not disturbed." The diagnosis was, "fracture of the base of the skull."

On the following day, August 22d, he was transferred to the Emergency Hospital, and placed under the care of Dr. C. M. Daniels, surgeon to the Erie railroad. He was, at this time, in a semi-conscious state, from which he could be aroused with difficulty. His pulse was about 60, and temperature 99° F. On the left side of the head, just above and behind the ear, there was a semi-circular wound of the scalp, of considerable extent, passing from above, downwards and backwards. The wound was said to be four inches long, although at the Fitch Accident Hospital it was noted as being two inches. The bone beneath did not seem to be fractured. The wound was sutured with catgut, and dressed antiseptically. On the right side, there was slight laceration and much contusion and swelling from above the mastoid process to the clavicle, and the parts were painful and sore.

There was some bleeding from both ears, and as the patient became conscious, it was found the hearing in both was somewhat impaired, most, however, in the right, although ordinary conversation could be heard with ease. There was complete facial paralysis on both sides, every muscle of expression being perfectly immobile, the patient being

1. Read before the Buffalo Medical and Surgical Association, July 2, 1889.

2. I am indebted to Dr. C. M. Daniels, Surgeon to the Emergency Hospital, for the privilege of reporting this case, and to Dr. E. H. Norton, Surgeon to the Fitch Accident Hospital, and Dr. C. Kelley, Jr., interne to the Emergency Hospital, for the early history of it.

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unable to close the eyelids or move the lips. He could, indeed, "Laugh and cry as from behind a mask," neither smile or frown having any expression in the face. Both right and left abducent nerves (nerves supplying the external recti muscles of the balls) were also completely paralyzed, producing paralytic convergent squint of both eyes. The physiognomy of the patient was thus rendered most peculiar and striking. The vision was a little "hazy," or "smoky," in both eyes, but worse in the right. In the right eye, the accommodation was also impaired and the pupil slightly dilated. The right side of the tongue was dry and rough, and there was total loss of taste, according to the statements of the patient. There was difficulty in swallowing, the muscles of deglutition (probably the palatal muscles) on the right side appearing to be most impaired in function. The patient succeeded better in the act by turning his head to the left side. Only liquids could be swallowed at first. Paralysis of any other part of the body, either of motion or sensation, could not be detected.

The patient, at this time, complained of intense pain in the frontal region of the head, in the eyes, and in the face. This was paroxysmal, coming and going at short intervals.

On the next day, August 23d, there was slight rise of temperature and increased frequency of pulse, and the parts injured, together with the face, were much swollen, and the face was also very red. The pains continued to be severe, requiring the administration of anodynes.

The subsequent history of the case is one of slow improvement. The pains gradually subsided. The patient was able to swallow semi-solid food on the third day, and soon afterwards solid food. The wounds and contusions healed rapidly. The sense of taste had fully returned within a month after the accident. Hearing improved, and the vision, together with the size and reaction of the right pupil, seemed to be normal after a few weeks. A few days after the patient was brought into the hospital, I was asked to see him, and have had occasion to examine him frequently since, and I found the condition of the eyes and ears as above noted. In addition, careful examination of the fundi of the eyes and of the membrana tympani showed no abnormal appearances whatever.

The facial paralysis, at the present time, has so far improved that the patient can nearly close his eyes, and in laughter there is some muscular movement about the mouth and nose. The left abducent nerve has nearly, or quite, regained its function, the left eye moving normally in all directions. The right abducent, however, is still fully paralysed, and the right eye cannot, therefore, be turned to the right. The hearing of the left ear is normal, while that of the right

is slightly impaired. Otherwise than the paralysis of the facial and abducent nerves which remains, and the impaired hearing of the right ear, the patient feels that he is as well as before the accident.

Such a combination of symptoms as appear in this case must be exceedingly rare, from whatever cause. It affords an interesting study to determine the character and the locality of lesions that can thus coincidentally produce a bilateral paralysis of the facial and abducent nerves, and also more or less transiently affect the sense of taste, the secretions of the mouth, deglutition, the ciliary muscle and iris of one eye, and the senses of vision and hearing.

Fracture of the base of the skull, extending into the petrous portion of each temporal bone, might have been such as to cause paralysis of both facial nerves, but such an injury would, undoubtedly, have also involved other structures so extensively as to terminate the life of the patient. At least, the auditory apparatus would have been so much injured as to produce total deafness. Certainly the abducent nerves could not, almost alone, have been the only structures implicated with the facial. There is no evidence that there was an external injury at or near the point of exit of the facial nerve from the cranium, especially on the left side, sufficient to produce the facial palsy; and, even if there were, the consecutive palsy of the abducent nerves could not thus be accounted for. Neither does it seem probable that a hemorrhage at the base of the brain, within the membranes, could have destroyed the function of both the facial and abducent nerves on both sides, and in their widely different courses, without seriously affecting other nerves and other functions. Nor could there have been a coincident hemorrhage in the pons Varolii or other parts in the course of the paralysed nerves on both sides, without marked paralysis elsewhere.

Where, then, could a lesion take place that would be most likely to destroy the functions of these two pairs of nerves, and at the same time cause the other symptoms? As is well known, the nuclei of several of the cranial nerves are grouped together in the medulla oblongata, beneath the floor of the fourth ventricle of the brain. In the upper part of this region, very near the median line, is the nucleus of the abducens. Just outside of this, and a little below, is the nucleus of the facial. (These nuclei were, not long ago, supposed to be one.) The fibers from the facial nucleus pass inwards and loop around the inner and upper sides of the nucleus of the abducens. Thus there is an intimate relation between the root-fibers of the facial and the nuclei of the facial and abducens.

Therefore, a lesion—for example, a hemorrhage—occurring near the median line in this region could impinge upon or affect

the nuclei and fibers of these two nerves on both sides, and very slightly, or not at all, involve other structures. Granting that there was fracture of the base of the skull; granting that there was more or less hemorrhage from the meninges of the brain, yet I believe that the symptoms in this case can be most rationally accounted for on the supposition of a hemorrhage near the median line of the floor of the fourth ventricle, between and affecting the nuclei of the abducent, and the nuclei or root-fibers of the facial nerves. Pressure on nuclei and fibers in near proximity could lead to the less pronounced and less persistent symptoms, such as loss of taste, impairment of vision and hearing, etc., already mentioned.

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*TOTAL MONOCULAR OPHTHALMOPHGLIA, EXTERNA  
AND INTERNA, CAUSED BY INJURY.<sup>1</sup>*

Charles Wolf, aged 22, presented himself to me on May 28, 1889, with the following history: About three and one-half weeks ago, while somewhat intoxicated, he had a quarrel with another man, who "punched" him in the left eye with an umbrella-stick. The next day or two afterwards he was admitted to the Toronto Hospital, where he was under the treatment of Dr. G. S. Ryerson. I have received the following note from Dr. Ryerson regarding the case, dated June 6, 1889:

Charles Wolf presented himself at the hospital about three weeks ago with a slight scar in the lower lid, and protrusion of eye; lid showed a little ecchymosis; ophthalmoscopic signs negative; said he was quite blind; went out in about the same state, except that the protrusion had diminished somewhat.

On examining the case I found an irregularly shaped scar on the left lower lid about three-fourths of an inch long, and running from near the inner canthus downwards and outwards. There was no ecchymosis of skin or ball, or other evidence of a very recent injury. There was complete ptosis of the upper lid, and the eye-ball was very prominent, protruding much farther from the orbit than the right. On raising the upper lid, the pupil was found to be fully dilated, and the ball was totally immobile to voluntary efforts, the patient not being able to turn it, even to the slightest extent, in any direction. By pressure upon the ball it would recede somewhat into the orbit. Ophthalmoscopic examination of the fundus showed the media to be clear, the optic disc pale, and the vessels diminished in size. The vision was entirely lost, the brightest light being imperceptible.

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General sensation of the ball and of the integument of the lids and forehead of the corresponding side did not seem to be impaired.

It is quite difficult for me to understand how the nerves within the orbit could be so injured as to thus completely paralyse every muscle within the orbit, and the circular fibers of the iris and the ciliary muscle, destroy the function of the optic nerve, and not impair the nerves of general sensation, and the sympathetic fibers, which, unopposed, cause the pupil to dilate. It seems, however, that the point of the umbrella-stick may have entered the orbit, and at its apex injured the nerves, whose functions are lost, although the history of the case does not make this absolutely certain.

Upon any theory of the *modus operandi* of the injury and paralysis, the case is interesting and unusual, as presenting the combined symptoms of proptosis, loss of vision, and total paralysis of all the extra-and intra-ocular muscles.

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